UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

MONICA GRANFIELD, individually and on behalf of a class similarly situated, Plaintiff, v. NVIDIA Corporation, Defendant.	)	Civil Action No.

CLASS ACTION COMPLAINT

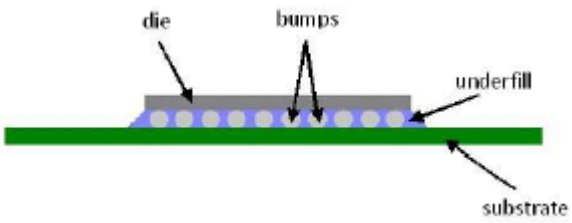
NATURE OF THE ACTION

1. Plaintiff brings this action against defendant NVIDIA Corporation ("NVIDIA" or the "Company") on behalf of herself and all others who were damaged when they purchased a computer equipped with any of the following defective NVIDIA graphics processing units ("GPUs"): G86, G86A2, G84, C51, G72, G72M, G73, G72A3, MCP67, MCP68, and NV42 (collectively the "NVIDIA GPUs," "Class Computers," and "Class" respectively). Excluded from the Class Computers are any notebook or laptop computers covered by the Settlement in *In re NVIDIA GPU Litigation,* Case No. C 08-4312 JW (N.D. Cal.), as more specifically set forth in Exhibit A hereto.

2. All of the NVIDIA GPUs are defective because they were all manufactured using an underfill material known as "Namics 8439-1 Underfill," which is not capable of withstanding the normal operating temperatures achieved by the Class Computers in which the NVIDIA GPUs are installed.

3. Namics 8439-1 Underfill acts as a bonding material in the NVIDIA GPUs. During the NVIDIA GPU manufacturing process, the Namics 8439-1 Underfill is injected as a soft paste-like material which fills in the open spaces surrounding the lead solder bumps that create the electrical contact points between the NVIDIA GPU and the "motherboard substrate" to which the NVIDIA GPU is physically attached as depicted in Figure 1 below:

Figure 1



4. During the NVIDIA GPU manufacturing process, the soft paste-like Namics 8439-1 Underfill is then cured at an elevated temperature. As a result, the soft paste-like Namics 8439-1 Underfill material is transformed into a hardened and rigid state. Once hardened, the Namics 8439-1 Underfill material surrounding the lead solder bumps acts to anchor each of these lead bumps/electrical contact points into place, thereby ensuring that these lead bumps remain properly aligned and in electrical contact in order to permit the electrical flow required for proper video operation of the Class Computers. Proper functioning of the video in the Class Computers depends upon the lead solder bumps remaining surrounded and locked into place by the hardened Namics 8439-1 Underfill material.

5. Although the Namics 8439-1 Underfill material is injected as a soft paste-like material and is transformed into a hardened and rigid state by heat curing this material, it is possible for the cured and hardened Namics 8439-1 Underfill to lose its structural rigidity and once again become soft and pliable. This occurs when cured and hardened Namics 8439-1

Underfill is exposed to temperatures above what is known as the "temperature of glassification"[1] of Namics 8439-1 Underfill. The temperature of glassification, or "Tg," is the temperature at which the cured Namics 8439-1 Underfill loses most of its structural rigidity and becomes soft and pliable again.

6. According to the Material Safety Data Sheet ("MSDS") for Namics 8439-1 Underfill prepared by the manufacturer of this material, the temperature of glassification of Namics 8439-1 Underfill is 70ºC.[2] As a result, when cured and hardened Namics 8439-1 Underfill is exposed to temperatures that approach or exceed the temperature of glassification, this cured and hardened material loses its structural integrity and becomes soft and pliable, and is unable to anchor the lead solder bumps firmly into place to ensure that electrical contact and continuity is maintained.

7. Because the internal operating temperatures of the Class Computers materially exceed the temperature of glassification of cured Namics 8439-1 Underfill, the cured Namics 8439-1 Underfill becomes soft and pliable, loses its structural rigidity, and is unable to anchor the lead solder bumps in order to ensure that the necessary electrical contact of these lead solder bumps is maintained. This defect results in the inability of Plaintiff and Class members to use their Class Computers for their intended purpose.

8. Remarkably, NVIDIA knew all of these facts **before** it began to sell and distribute the defective NVIDIA GPUs because:

(i) NVIDIA had been provided with the Material Safety Data Sheet ("MSDS") for Namics 8439-1 Underfill by the manufacturer of this material prior to the

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[1] Scientifically denoted as "Tg."

[2] See http://www.namics.co.jp/e/product/chipcoat01.html.

time NVIDIA began selling and distributing the defective NVIDIA GPUs. As a result, NVIDIA had actual knowledge that the temperature of glassification of Namics 8439-1 Underfill is 70ºC prior to the time NVIDIA began selling and distributing the defective NVIDIA GPUs; and

(ii) NVIDIA was also provided with the operating specifications for each of the Class Computers by the manufacturers of these computers prior to the time NVIDIA began selling and distributing the defective NVIDIA GPUs and, therefore, had actual knowledge that the operating temperatures of the Class Computers all exceeded the temperature of glassification of Namics 8439-1 Underfill.

Because NVIDIA possessed actual knowledge of these facts **before** it began to sell and distribute the NVIDIA GPUs, NVIDIA had actual knowledge that all of the NVIDIA GPUs were defective at the time NVIDIA began to sell and distribute them.

9. In addition, almost immediately after the first Class Computers equipped with the defective NVIDIA GPUs were introduced and offered for sale, NVIDIA was notified that it was selling and distributing millions of defective NVIDIA GPUs when it began to receive a steady flow of complaints from the computer manufacturers to whom NVIDIA had sold the defective NVIDIA GPUs and their customers.

10. Plaintiff and Class members were not aware that they were purchasing computers equipped with defective NVIDIA GPUs. Had Plaintiff and Class Members known about the defect, they would not have purchased Class Computers equipped with the defective NVIDIA GPUs.

11. NVIDIA has taken partial responsibility for having distributed and sold NVIDIA GPUs that it knew to be defective. NVIDIA has done so by entering into a settlement in the action titled *In re NVIDIA GPU Litigation*, Case No. C 08-4312 JW (N.D. Cal.) ("*In re NVIDIA GPU Litigation*") in 2010. As demonstrated by the Settlement Stipulation entered into in *In re NVIDIA GPU Litigation*, a copy of which is annexed as Exhibit B hereto, however, **the settlement entered into in that case provides a remedy for only a very limited number of persons or entities who purchased only certain models of computers equipped with defective NVIDIA GPUs that were sold by Apple, Dell, and Hewlett-Packard**.

12. Inexplicably, **despite the fact that all of the Class Computers are equipped with defective NVIDIA GPUs, NVIDIA has deliberately excluded purchasers of the millions of computers sold by Acer, Asus, Fujitsu-Siemens, Samsung, Sony, and Toshiba (among others) that were equipped with defective NVIDIA GPUs from participation in the settlement** reached in *In re NVIDIA GPU Litigation*. In addition, NVIDIA has also deliberately refused to allow purchasers of certain other models of Dell and HP computers equipped with defective NVIDIA GPUs to participate in the settlement.

13. As a result, Plaintiff has commenced this Class Action on behalf of herself and all other similarly situated purchasers of the Class Computers equipped with defective NVIDIA GPUs who have been deliberately excluded from the settlement reached in *In re NVIDIA GPU Litigation* in order to recover for the damages they have incurred as a result of having unknowingly purchased Class Computers equipped with defective NVIDIA GPUs.

JURISDICTION AND VENUE

14. This Court has jurisdiction over all causes of action asserted herein pursuant to 28 U.S.C. § 1332(d) because the aggregate claims of Plaintiff and members of the Class exceed

the sum or value of $5,000,000, and there is diversity of citizenship between at least one member of the proposed Class and Defendant.

15. Venue is proper in this District because Plaintiff purchased her computer, equipped with a defective NVIDIA GPU, in this District.

PARTIES

16. Plaintiff Monica Granfield is a citizen of Massachusetts. On April 22, 2008, she purchased an HP Pavilion dv9700 notebook computer equipped with a defective NVIDIA GeForce 8600M GPU. Granfield's notebook has shown, and continues to show, signs of the NVIDIA GPU defect, including the severely degraded video display and the notebook periodically shutting down entirely without warning. At the time of purchase, Granfield was not aware of the defect complained of herein. In January 2011, Granfield notified HP, and through HP, notified NVIDIA about the problems she was experiencing with her notebook computer (and about similar problems experienced by HP customers reported on HP forums) and requested that the notebook be repaired at HP's cost. NVIDIA and HP refused to correct, repair, replace, or otherwise rectify the problems alleged herein at its cost because Granfield's two-year extended warranty had already expired. As a result, Granfield has suffered injuries and damages in a manner similar to other Class members.

17. Defendant NVIDIA is a Delaware corporation with its headquarters and principal place of business at 2701 San Tomas Expressway, Santa Clara, California, and offices throughout Asia, Europe, and the Americas. NVIDIA designs, develops, and markets three dimensional (3D) graphics processors and related software. The Company's products provide interactive 3D graphics to the mainstream personal computer market. NVIDIA is the second

leading producer of GPUs worldwide (as of the second quarter of fiscal 2008), controlling 31.4 percent of the market.

FACTUAL ALLEGATIONS

Background on the NVIDIA Graphics Processing Unit or "GPU"

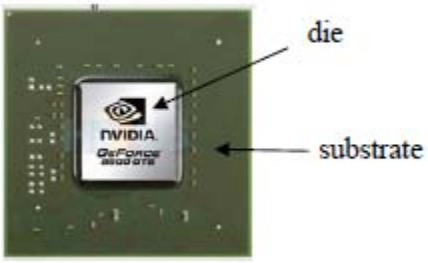
18. Defendant NVIDIA manufactures and sells graphics processing units ("GPUs").

19. Every computer contains a Central Processing Unit, which is commonly referred to as a "CPU." The CPU is the "brain" of the computer and oversees and controls every programming function. To operate properly, the CPU must connect with other internal components of the computer. The CPU connects to these other internal components through the computer's "motherboard." The motherboard is the main circuit board and the CPU, memory, graphics, sound, and other processors and components are all attached to the motherboard.

20. For a computer to display images and video on the display monitor, the CPU sends data to the computer's Graphics Processing Unit, or GPU, which is connected to the computer's motherboard. The GPU's function is to process the data and output images to a video display. The GPU is the primary processor responsible for rendering graphics on the computers at issue.

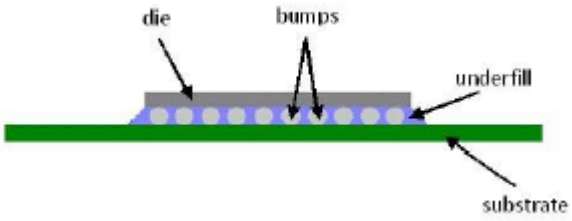
21. To protect the fragile GPU from damage, the GPU is placed into a chip "package," which is soldered onto the motherboard. Each GPU package, like that pictured in Figure 2 below, consists of the "die," which is a silicon chip, mounted onto the "substrate," the green circuit board which routes signals and attaches the die to other computer components.

Figure 2



22. As depicted in Figure 3 below, the die is soldered to the substrate via "bumps" of solder that carry signals and power. Also between the die and substrate is "underfill," a glue-like material that acts as an additional bonding agent to fortify the connection between the die and the substrate, provides mechanical support, and provides a moisture barrier to protect the bumps.

Figure 3



23. GPUs consume electricity. When the GPU is turned on, the die becomes hot and heats the substrate secondarily. The silicon on the die has one rate of thermal expansion and the substrate has another rate of thermal expansion. The rates are constantly changing, as different parts of the GPU are used. As a result of the GPU heating up, the bumps also heat up and take a lot of stress.

24. NVIDIA sold its defective GPUs to Original Equipment Manufacturers ("OEMs") for use in those manufacturers' computers. These OEMs included Dell, Toshiba, Apple, HP, Asus, Samsung, Fujitsu-Siemens, Sony, and Acer, among others.

25. As detailed below, there exists a material design defect in the NVIDIA GPUs that does not permit the NVIDIA GPUs to withstand normal operation.

The NVIDIA GPUs Are Defectively Designed

26. In late 2006, NVIDIA began to experience cracks at the substrate-to-bump interface joint in its GPUs. NVIDIA determined that this cracking at the substrate-to-bump interface joint was occurring because the eutectic solder used in the manufacturing process was not durable enough to withstand the stress that these eutectic solder bumps were experiencing during normal computer operation.

27. In an attempt to resolve this issue, NVIDIA stopped using eutectic solder and began using what is known as "high-lead solder" instead. NVIDIA did so based on NVIDIA's belief that the high-lead solder bumps would be more malleable, and therefore more capable of withstanding fatigue at the solder bump-substrate interface joint caused by ordinary use of the computers, and resulting from the expansion of two different materials (the high-lead solder on the one hand and the polymer substrate on the other hand) at different rates when heated.

28. NVIDIA made this change without having performed the necessary testing to determine whether the change from eutectic solder to high-lead solder would ultimately cure the problem that NVIDIA had identified in 2006. Had NVIDIA bothered to perform such tests, however, NVIDIA would have learned that the abrupt change from eutectic solder to high-lead solder did not cure NVIDIA' s problems, but rather created a much larger problem for NVIDIA.

29. While high-lead bumps are more malleable, they are also known to be far more susceptible to fatigue during ordinary use. Because high-lead bumps are more prone to stress fractures, when the NVIDIA GPUs were heated during normal computer operation, the high-lead bumps weakened and fractured.

30. In addition, NVIDIA utilized the underfill material known as "Namics 8439-1 Underfill," which is not capable of withstanding the normal operating temperatures achieved by the Class Computers in which the NVIDIA GPUs are installed. Namics 8439-1 Underfill material acts as a bonding material in the NVIDIA GPUs. During the NVIDIA GPU manufacturing process, the Namics 8439-1 Underfill material is injected as a soft paste-like material which fills in the open spaces surrounding the high-lead solder bumps that create the electrical contact points between the NVIDIA GPU and the "motherboard substrate" to which the NVIDIA GPU is physically attached.

31. During the NVIDIA GPU manufacturing process, the soft paste-like Namics 8439-1 Underfill material is then cured at an elevated temperature. As a result, the soft paste-like Namics 8439-1 Underfill material is transformed into a hardened and rigid state. Once hardened, the Namics 8439-1 Underfill material surrounding the high-lead solder bumps acts to anchor each of these lead bumps/electrical contact points into place, thereby ensuring that these lead bumps remain properly aligned and in electrical contact in order to permit the electrical flow required for proper video operation of the Class Computers. Proper functioning of the video in the Class Computers depends upon the lead solder bumps remaining surrounded and locked into place by the hardened Namics 8439-1 Underfill material.

32. Although the Namics 8439-1 Underfill material is injected as a soft paste-like material and is transformed into a hardened and rigid state by heat curing this material, it is

possible for the cured and hardened Namics 8439-1 Underfill to lose its structural rigidity and once again become soft and pliable. This occurs when cured and hardened Namics 8439-1 Underfill is exposed to temperatures above what is known as the "temperature of glassification" of Namics 8439-1 Underfill. The temperature of glassification, or "Tg," is the temperature at which the cured Namics 8439-1 Underfill loses most of its structural rigidity and becomes soft and pliable again.

33. According to the MSDS for Namics 8439-1 Underfill prepared by the manufacturer of this material, the temperature of glassification of Namics 8439-1 Underfill is 70ºC. As a result, when cured and hardened Namics 8439-1 Underfill is exposed to temperatures that approach or exceed Namics 8439-1 Underfill's temperature of glassification, this cured and hardened material loses its structural integrity and becomes soft and pliable, and is unable to anchor the lead solder bumps firmly into place to ensure that electrical contact and continuity is maintained.

34. Because the internal operating temperatures of the Class Computers materially exceed the temperature of glassification of cured Namics 8439-1 Underfill, the cured Namics 8439-1 Underfill becomes soft and pliable, loses its structural rigidity, and is unable to anchor the high-lead solder bumps in order to ensure that the necessary electrical contact of these high-lead solder bumps is maintained. This defect results in the inability of Plaintiff and Class members to use their Class Computers for their intended purpose.

35. Charles Demerjian, a reporter with 25 years experience working with computers, wrote several articles about NVIDIA's GPU defects for TheInquirer.net, a website focusing on technological processes and current events in the electronics field. In a September 1, 2008 article, Demerjian described the defect in the NVIDIA GPUs as follows:

> … [H]igh-lead bumps are stiffer than eutectic and more prone to stress fractures. The high-lead-to-eutectic substrate bond is also weaker than a sutectic-to-eutectic bond. What is happening to Nvidia is that the substrate to bump joint is cracking, and the chips die. ***High lead bumps are a poor choice to use in this application***.

(Emphasis added.)

36. Furthermore, to protect against these potential weaknesses, the high-lead bumps must be well supported by the underfill, and the combined chip must be rigorously tested.

37. Underfill has two important properties. The first is hardness, or how rigid the underfill is before a force (such as temperature) is applied. There are several types of underfill ranging from rock solid to more malleable. The softer the underfill, the less mechanical support it provides for the bumps and, therefore, the more stress there is on the bumps. The harder the underfill, the more mechanical support it provides and, therefore, the less stress there is on the bumps. If the underfill is too hard, however, it can damage the polyimide layer which provides additional support for the bumps.

38. The second property is temperature of glassification (Tg). This is the temperature at which the underfill goes soft and loses most of its structural rigidity. Tg is thus related to stiffness, as a less stiff underfill would glassify at a lower temperature, whereas a stiffer underfill would glassify at a higher temperature.

39. In the case of NVIDIA's GPUs however, NVIDIA used the Namics 8439-1 underfill, which had a low Tg, and therefore a low tolerance for higher temperatures. As a result, the Namics 8439-1 underfill used by NVIDIA in the NVIDIA GPUs turned soft at higher temperatures and failed to provide sufficient support for the high lead solder bumps. For example, NVIDIA's low Tg underfill began losing strength at 60°C and by 80°C it was 1,000 times less rigid than its initial state.

40. Demerjian further described the defect in the NVIDIA GPUs in a second September 1, 2008 TheInquirer.net article:

> ***…[The] underfill… is probably the key to the problem***… The underfill that Nvidia used, Namics 8439-1 is what's called a low Tg material, and the Hitachi 3730 has a higher Tg…
>
> …If Nvidia did their homework right, the Tg of the material should never be hit, the chip should always run below that temp, and the underfill should provide the mechanical support needed to keep the high lead bumps from fracturing. This is why you engineer, test, retest, simulate, pray a lot, and pick your materials very carefully…

(Emphasis added.)

41. Demerjian's second September 1, 2008 TheInquirer.net article also provides a synopsis of the NVIDIA GPU failure chain:

> …So the failure chain happens like this. ***NV[idia] for some unfathomable reason decides to design their chips for high lead bumps***, something that was likely decided at the layout phase or before because the bump placement is closely tied to the floorplan. At this point, they are basically stuck with the bump type they chose for the life of the chip.
>
> ***The next choice was the underfill materials***, and again, they chose the known low Tg part that had far less tolerances than the newer to the market high Tg materials. It was a risk vs risk proposition, likely with a lot of cost differences as well. ***They chose wrong, very wrong***. The stiffness of the Namics material might be perfect below the Tg, but once you hit it, it is almost like it isn't there, and the stress transfers to the bumps when they hot and weak.

(Emphasis added.)

42. As the Class Computers were used and attained their normal operating temperatures during use, the Namics 8439-1 Underfill began to soften as a result of thermal stress. This stress was then transferred to the high-lead solder bumps at the substrate to bump joint interface. As a result of NVIDIA's deliberate decision to utilize high-lead solder bumps in

conjunction with the Namics 8439-1 low Tg Underfill, the NVIDIA GPUs experienced cracks at the substrate-to-bump joint interface which causes the Class Computers to malfunction.

43. In particular, NVIDIA's defective GPUs cause Class members' computers to display corrupted video images, including distorted images and lines as well as garbled characters, and even to suffer complete monitor/display system failure.

Consumer Complaints Concerning the Defective NVIDIA GPUs

44. As a result of the defect in the NVIDIA GPUs, Class members who purchased Class Computers containing these NVIDIA GPUs experience display problems and system failures as evidenced by the hundreds (if not thousands) of complaints posted on the Internet.

45. Not surprisingly, the complaints are not limited to the computers covered by the settlement agreed to by NVIDIA in *In re NVIDIA GPU Litigation*. Instead, the complaints concern the numerous models of notebook computers sold by various OEMs including Acer, Asus, Fujitsu-Siemens, Samsung, Sony, and Toshiba – as well as several computer models sold by Apple, Dell, and HP that were deliberately excluded from this settlement despite the fact that they are all equipped with defective NVIDIA GPUs.

46. Excerpts from some of these computer complaints are set forth below:

Model Number and Source	Comments
Acer Aspire 5920 TheInquirer.com	I have similar problems with my acer aspire 5920G. It's starting to shut down, completely without warning, AGAIN. And I had it fixed just last august for freezing and shutting down. Although I think they only changed the hard drive. That's not really helpful when the frickin 8600m is frying all the hardware. I doubt the store where i bought it will change my graphics card, warranty being expired and all. F**k! I's not even a frickin laptop! It's so hot it burns my thighs and I can't put it on my lap.

Acer Aspire 7520 TomsHardware.com	I recently bought an Acer Aspire 7520; full specs of my laptop are as follows: AMD Turion 64 Dual Core TL 60 @ 2Ghz, 2Gb DDR2, on Nvidia 8600 GS with 512 RAM. Until a week or two ago, I could play almost all the latest games on the laptop, like Call of Duty 4, Devil May Cry 4, Battlefield 2 (which is a little older type of game) and laptop behaved perfectly, games were running almost all on medium to high details.. but I started getting lags, more and more, the back of my laptop case is getting hotter now, and it seems that my back vent for 8600 is getting smoking hot.
Asus G1S HardForum.com	This sucks. My Asus G1S isn't listed even though almost every single G1S had the 8600m overheat and die. Mine did back in June, just 6 months out of warranty but I sent it in to Asus anyway stating that it was the GPU, was a known issue with that notebook, was a manufacturing defect and should be covered even if it was out of warranty.
HP Pavilion dv9500 HP Support Forum	Last night I was on my computer working on a graphic design project for school (was running Photoshop) when the screen went a weird purple color and then completely blank after a minute or so. The computer was still running, however, and pretty hard at that, so I shut it off. Since then, whenever I turn it on the screen shows up split into four, equal, horizontal parts.
HP Pavilion dv600 Microsoft Answers	I've been having this problem for a while. Sometimes the screen will just go black and then say I had an error and the successfully recovered. Then sometimes randomly especially when I'm playing videos I'll get the blue screen of death. I had this problem multiple times and so far no fix has been published. All I know is that it has something to do with the Nvidia graphics driver. I have a hp pavilion dv9600 with a Nvidia GeForce 8600M GS and i'm running windows 7 the 32bit version.
HP Pavilion dv9700 HP Support Forum	Well, I have the same problem as many of you do with my DV9700, 4 months after my warranty expired the display started to get white lines and shut off, now laptop starts but display is black. I called HP, same story, they want $398 to replace the mother board. I paid over $1,300 for it and now it's useless. Laptop was always running hot.
HP Pavilion dv9700 HP Support Forum	My computer is a HP Pavilion dv9700 CTO Entertainment Notebook PC with the same grey screen and lines. It is just out of warranty and HP said it is not on the list to be fixed, it also has a NVIDIA 8600 graphics card. It would be over 400 with shipping to get my $1600+ laptop fixed.

HP Pavilion dv9700 HP Support Forum	I've had the same problem. I have a DV 9700 laptop which lasted 14 months. The computer always ran hot and I had a new fan put in. Turned it on last week and the screen went blank with multiple colored lines in it. Took it in and they said that the video card is gone, but apparently it is embedded in the motherboard. It will cost 400.00 to fix.
HP Pavilion dv9775 HP Support Forum	I have the hp pavilion dv9775ee (dv9000 series) which I bought on the 14th of May 2008 for $2100 and I am having problems with my gpu as well. I have blue lines on the white hp startup logo at power up and a lot of issues when my Nvidia GeForce 8600M GS drivers are loaded in the operating system, like blank screens, not accessing the windows welcome screen, not being able to access the operating system and blue screens etc. I have uninstalled the graphics drivers in safe mode and now I am running the computer with the Standard VGA drivers supplied by the Vista operating system just so that I can use the computer again. I have also set my power profile to "Balanced" and my operating system to best performance. Everything is working fine except not being able to use my gpu..... I can't play any games at all ... not happy with this defective product from HP and nvidia after only using it for 15 months.
Toshiba Qosmio F40 Forums.Toshiba.Com	I have a qosmio f40 with an 8600M GT (G84 core), and I suspect this issue. http://laptopforums.toshiba.com/t5/Video-Display/Qosmio-F40-Laptop-screen-is-black-external-monitor... I have already had the graphics board fail about a year ago. Now my laptop screen recently went black and I don't get HDMI output either (the external monitor works ok though). I've already spent $400 on a motherboard and cable to try to fix. But no luck. The repair shop tested the laptop screen on another laptop and it worked fine. What else can it be other than the video board? Apple and Dell are helping their customers out. I am hoping Toshiba does the same. The money I've already spent is bad enough. But the time and lost work!

Toshiba Satellite x205-SLi5 Forums.Toshiba.Com	Just talked with Toshiba and they are apparently "Unaware" of the NVIDIA 8600M GT manufacturer defects. My Satellite x205-SLi5 quit working this weekend 18 months after purchase. The issue reveals itself as 3 beeps with no bootup. The first beep is slightly quieter than the other 2 beeps. beep----Beep----Beep. I am filing a complaint with the BBB and recommend any others experiencing this problem do the same. I would guess that this issue will begin affecting more people very soon as I use my laptop daily for long periods of time. Others with this card should prepare for an inoperable system. I have also read that allowing the battery to run out will decrease the life of the Graphics Card.

NVIDIA Knew About the NVIDIA GPU Defect as Early as 2006

47. According to a former manager with HP's product engineering department, HP began conducting an investigation in 2006 into suspected defects in its laptops containing the NVIDIA GPUs. NVIDIA knew of the investigation results and should have been aware of the chip defects before the GPUs were shipped to OEM manufacturers.

48. This former HP manager, who was part of the team that conducted the root cause analysis for NVIDIA's chipset problem, reported: "We [HP] were concerned due to the failure rate [of the GPUs in our laptops], and we started auditing the records from NVIDIA – their RMA [returned merchandise authorization] records – around the 2006 time frame." According to this former manager, HP was seeing failures of 4,000 DPPM (defective parts per million), and rates as low as 1,000 DPPM indicate a real problem.

49. This former HP manager further explained that HP had "found issues with… fractures at the bump level between the die and the substrate" and stated that it was obvious that the cause was a thermal transition of the underfill material. Significantly, this individual further stated that HP "***highlighted the data to NVIDIA, shared the data with NVIDIA***," every step of

the way, but NVIDIA continued to push back and say that it was not the Company's fault. (Emphasis added.)

50. More specifically, this former HP Manager reported that the data regarding – and details of – this hardware defect were shared with NVIDIA, and in the face of NVIDIA's push-back: "In the first quarter of 2007, we [HP] began engaging them [NVIDIA] much more heavier, at an executive level." He further reported that "we were hassling these guys and having them come on site – they were shipping these products to everybody," and that, "NVIDIA was on-site with HP, into the factories, having conversations at the director level, toward the end of the first quarter of [2007]."

51. The former HP Manager also stated that "testing [at HP] began end of 2006, and by early 2007, we had solid findings, started reproducing failures in our labs." According to this individual, by early 2007, HP "had overwhelming data demonstrating root cause – it was really, really clear" and HP was sharing all of its data with NVIDIA.

52. This individual further explained that the root cause of the materials problem had been identified by HP in early 2007 and reproduced by NVIDIA by mid-2007. In early 2007, HP had identified the thermal profile that could cause the underfill to go through a phase transition – weakening and allow the substrate-to-bump joint to crack. He reported that, "***at least by the middle of 2007, we [HP] had them [NVIDIA] perform our [thermal] profile in their labs and they reproduced it.***" (Emphasis added.)

53. Significantly, information provided by Demerjian, who spoke to dozens of people about the problems, confirms this timeline. In particular, Demerjian spoke with HP employees regarding the NVIDIA GPU defect. He stated that in January 2007, computers sold by HP were failing. According to an HP engineer who spoke with Demerjian, the problems

with NVIDIA's 7000 series had failure rates as high as 50 percent. According to Demerjian, HP started a "root cause analysis" and by summer 2007, HP employees knew that NVIDIA GPUs were having problems associated with heat cycling.

54. Demerjian also spoke with a former employee of HP who stated that HP used an internal defect tracking system named ACER, to which the former employee had access. Demerjian reports that, according to the former HP employee, HP noticed a systematic problem with NVIDIA's chips on HP laptops in January 2007. By mid-2007, the problems with NVIDIA's chips were so serious that they caused a significant change in HP's average defect rate.

55. Dell was also notifying NVIDIA of problems with its GPUs by early 2007. According to another individual who worked in the PG Test Group at Dell in 2007 testing prototypes for high-end gaming and office programs, including NVIDIA products, recalled that Dell saw problems with NVIDIA GPUs in early 2007. This individual communicated directly with NVIDIA regarding this problem and reported that the Company eventually admitted that it was their chip causing the problem, and that it was not a Dell issue.

56. Despite knowledge of the NVIDIA GPU defect, NVIDIA continued to sell and ship the defective NVIDIA GPUs to OEM manufacturers, which resulted in the defective NVIDIA GPUs being installed in the Class Computers that were sold to Class members, and millions of dollars in harm and injury being caused to Plaintiff and to Class Members.

57. Although NVIDIA has acknowledged its responsibility for having sold and distributed defective NVIDIA GPUs to those individuals and entities who NVIDIA has agreed are eligible to participate in the settlement agreed to by NVIDIA in *In re NVIDIA GPU Litigation*, NVIDIA has inexplicably refused to remedy the millions of dollars in damages that

it caused to the Class members who similarly purchased the Class Computers equipped with the defective NVIDIA GPUs.

CLASS ACTION ALLEGATIONS

58. Plaintiff brings this action on behalf of herself and as a class action against Defendant on her own behalf and on behalf of all other similarly situated persons and entities who purchased the Class Computers. Any claims for personal injury are expressly excluded from this class action.

59. The Class is comprised of all residents of the States of Alaska, Arkansas, Colorado, Delaware, Hawaii, Indiana, Iowa, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Jersey, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, Texas, Virginia, West Virginia, or Wyoming who purchased a Class Computer containing a NVIDIA GPU.

60. Members of the Class are so numerous that joinder of all members would be impracticable. Plaintiff estimates that there are hundreds of thousands of purchasers of the Class Computers.

61. There are questions of law and fact common to all the members of the Class that predominate over any questions affecting only individual members, including:

a. Whether the NVIDIA GPUs were defectively designed;

b. Whether NVIDIA knew, or was reckless in not knowing, that the NVIDIA GPUs in the Class Computers were defective at the times that Defendant manufactured and sold the NVIDIA GPUs to be installed in Class Computers;

c. Whether Defendant breached the implied warranty of merchantability; and

d. Whether as a result, of Defendant's misconduct, Plaintiff and the other Class members are entitled to damages, restitution, equitable relief, or other relief, and the amount and nature of such relief.

62. The claims of Plaintiff are typical of the claims of the members of the Class. Plaintiff has no interests antagonistic to those of the Class, and Defendant has no defenses unique to Plaintiff.

63. Plaintiff will fairly and adequately protect the interests of the Class, and has retained attorneys experienced in class and complex litigation.

64. A class action is superior to all other available methods for this controversy because: i) the prosecution of separate actions by the members of the Class would create a risk of adjudications with respect to individual members of the Class that would, as a practical matter, be dispositive of the interests of the other members not parties to the adjudications, or substantially impair or impede their ability to protect their interests; ii) the prosecution of separate actions by the members of the Class would create a risk of inconsistent or varying adjudications with respect to the individual members of the Class, which would establish incompatible standards of conduct for Defendants; iii) Defendants acted or refused to act on grounds generally applicable to the Class; iv) questions of law and fact common to members of the Class predominate over any questions affecting only individual members; and v) a class action is superior to other available methods for the fair and efficient adjudication of the controversy.

65. Plaintiff does not anticipate any difficulty in the management of this litigation.

COUNT I
(Individually and on Behalf of All Class Members For Breach Of Implied Warranty Of Merchantability)

66. Plaintiff hereby incorporates all the above allegations by reference as if fully set forth herein.

67. The Class Computers are "goods" within the meaning of that term under the Implied Warranty of Merchantability statutes of the States listed herein.

68. Defendant is a "merchant" within the meaning of that term under the Implied Warranty of Merchantability statutes of the states listed herein because it is a manufacturer and seller of the NVIDIA GPUs.

69. The Implied Warranty of Merchantability is implied in the sale of the Class Computers containing the defective NVIDIA GPUs, and requires, among other things, that the Class Computers containing the NVDIA GPUs pass without objection in the trade and are fit for the ordinary purposes for which they are used.

70. The NVIDIA GPUs do not function in their ordinary capacity and were not merchantable at the time of sale because the NVIDIA GPUs were defectively designed.

71. The defect in the NVIDIA GPUs renders the Class Computers non-merchantable because the Class Computers containing the NVIDIA GPUs could not be used for their ordinary purposes and thereby proximately caused the economic damages suffered by Plaintiff and other similarly situated members of the Class.

72. Plaintiff provided Defendant with notice of the defect as set forth in ¶ 16 above. In addition, NVIDIA was put on notice of the defect in the NVIDIA GPUs through the action titled *In re NVIDIA GPU Litigation*, because the Plaintiff and the members of the Class were included in the class definition in the case as pled, but their computers were not covered by the

settlement of that case. Even if notice had not been adequately provided, NVIDIA, in any event, would not have been prejudiced by a lack of notice.

73. Any purported disclaimer or limitation of the Implied Warranty of Merchantability on the part of Defendant is unenforceable because the Implied Warranty of Merchantability may not be disclaimed. In addition, any such disclaimer would be unconscionable because NVIDIA had knowledge of the defect in the NVIDIA GPUs.

COUNT II
(Individually and on Behalf of All Class Members for Breach Of Warranty Under Magnuson-Moss Warranty Act, 15 U.S.C. §§ 2301 et seq.)

74. Plaintiff hereby incorporates all the above allegations by reference as if fully set forth herein.

75. The defective Class Computers at issue are "consumer products" within the meaning of the Magnuson-Moss Act, 15 U.S.C. § 2301(1).

76. Plaintiff and Class members are "consumers" within the meaning of the Magnuson-Moss Act, 15 U.S.C. § 2301(3).

77. Defendant NVIDIA is a "supplier" and "warrantor" within the meaning of the Magnuson-Moss Act, 15 U.S.C. § 2301(4)-(5).

78. Defendant impliedly warranted to Plaintiff and Class members that the NVIDIA GPUs were of merchantable quality and fit for the ordinary purposes for which the GPUs are used.

79. Defendant refuses to recognize or honor its implied warranties. Defendant breached its implied warranties as the defective NVIDIA GPUs were not of merchantable quality and failed to perform in the ordinary purposes for which they were used.

80. The amount in controversy of each Plaintiff and Class member's individual claim meets or exceeds the sum or value of $25. In addition, the amount in controversy meets

or exceeds the sum or value of $75,000 (exclusive of interest and costs) computed on the basis of all claims to be determined in this suit.

81. Resorting to any further informal dispute settlement procedure or affording Defendant another opportunity to cure its breach of implied warranties is unnecessary or futile.

82. Defendant knew, reasonably should have known, or was reckless in not knowing of the defective NVIDIA GPUs and their inability to perform as warranted, but nevertheless failed to rectify the situation. Further, Plaintiff has provided Defendant with notice of such breaches, and requested that they be cured, which has been ignored. Any remedies available through informal dispute settlement procedures would be inadequate under the circumstances based on what Defendant has said it would do. Accordingly, any requirement under the Magnuson-Moss Act or otherwise, that Plaintiff resort to informal dispute settlement procedures or afford Defendant a reasonable opportunity to cure its breach of implied warranties, is excused or has been satisfied.

83. As a proximate result of Defendant's breach of implied warranties, Plaintiff and Class members have sustained damages and other losses in an amount to be determined at trial.

84. Plaintiff and Class members are entitled to recover damages, costs, attorneys' fees, rescission and other relief as is deemed appropriate.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays that the Court enters judgment and orders in Plaintiff's favor and against Defendant as follows:

A. An order appointing the named Plaintiff as Class Representative, appointing Interim Lead Counsel as Lead Counsel for the Class, and certifying the Class and directing that this case proceed as a class action;

B. An order requiring that Defendant establish a common fund for repairs to the NVIDIA GPUs of the Class Computers;

C. Judgment in favor of Plaintiff and the members of the Class in an amount of actual damages to be determined at trial;

D. An order granting reasonable attorneys' fees and reimbursement of expenses, as well as pre- and post judgment interest;

E. An order granting Plaintiff and members of the Class restitution; and

F. Such other and further relief as this Court may deem appropriate.

DEMAND FOR A TRIAL BY JURY

Plaintiff demands a trial by jury on all issues so triable as a matter of right.

DATED: July 22, 2011,

By her attorneys,

/s/ Ian J. McLoughlin

Edward F. Haber
Michelle H. Blauner
Ian J. McLoughlin
Shapiro Haber & Urmy LLP
53 State Street
Boston, MA 02109
Telephone: (617) 439-3939
Facsimile: (617) 439-0134
ehaber@shulaw.com
mblauner@shulaw.com
imcloughlin@shulaw.com

Attorneys for Plaintiff